

Remarks

Claims 1-19 are pending. Reconsideration and allowance in view of the above amendments and the following remarks are respectfully requested.

Claim 11 has been amended to correct a typographical error.

Claims 1-19 are rejected under 35 U.S.C. §102(b) over Reich et al. (U.S. 5,958,635), hereafter "Reich" and over Lu (U.S. 6,303,253)

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros., Inc. v. Union Oil Co., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)"; see also MPEP § 2131. Because each and every claim element is not found in the applied references, Applicants respectfully submit that the rejections under 35 U.S.C. §102(b) are defective and request withdrawal of the rejections.

It is further noted that, with respect to rejection of claims under 35 U.S.C. §102, it is incumbent upon the Examiner to identify wherein each and every facet of the claimed invention is disclosed in the applied reference. In the Office Action, however, the Examiner failed to identify or point out where in the applied references the features of Applicants' claimed invention allegedly are disclosed.

Nonetheless, Applicants submit that the claims of the

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present invention are not anticipated by the disclosures to Reich or Lu since the applied references do not disclose each and every feature of Applicants' claimed invention.

As discussed in the specification of the present application, SRAFs, otherwise known as scattering bars or intensity leveling bars, are non-printing sub-lithographic features placed adjacent to a main feature that is to be printed (see, e.g., paragraphs [0008], [0009]). SRAFs are used in conjunction with off-axis illumination (OAI) techniques to improve the quality of the circuit pattern produced.

As known in the art, several distinct types of resolution enhancement techniques (RET) have been developed, each targeted at one of the physical properties of a wavefront on a mask. Wave direction is controlled by designing special illuminators (i.e., OAI), wavefront amplitude is controlled by deliberately and proactively distorting the aperture sizes and shapes of a mask (optical process correction (OPC)), and local wavefront phase is controlled by changing material properties or etching structures into the surface of the mask (phase-shifting masks (PSM)). Thus, one skilled in the art would understand that the use of OAI with SRAFs is distinct from OPC resolution enhancement.

As understood, Reich discloses the use of lithographic proximity correction (LPC) shapes (col. 1, lines 63-67 and FIG. 2), which in FIG. 2 clearly overlap the shapes 110 and 115.

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However, Reich fails to disclose, *inter alia*, SRAF elements.

Further, as understood, Lu discloses OPC serif mask design using a hierarchy methodology (Abstract, col. 5, lines 38-39).

However, Lu also fails to disclose, *inter alia*, SRAF elements.

As discussed in the specification of the present application, the "cleanup" of an SRAF design containing un-manufacturable SRAF solutions may negatively impact lithographic performance (e.g., reduce process window, reduce yield, etc.). According to one aspect of the claimed invention, the coverage of SRAFs in a given layout is increased by:

"providing a plurality of SRAF configurations for the layout;

ranking the SRAF configurations based on a figure of merit;
applying a highest ranked SRAF configuration to the layout;
applying a predetermined number of lower ranked SRAF configurations to the layout; and

selecting SRAF features from at least one of the applied SRAF configurations to provide an optimal SRAF configuration for the layout."

Both Reich and Lu are completely silent with regard to, *inter alia*, the ranking of a plurality of SRAF configurations for a given layout based on a figure of merit, the application of a highest and a predetermined number of lower ranked SRAF configurations to the layout, and the selection of SRAF features

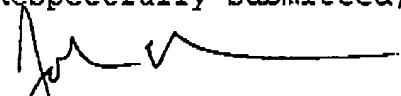
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from at least one of the applied SRAF configurations to provide an optimal SRAF configuration for the layout. Indeed, the Examiner has failed to point out where in Reich or Lu any of these features are disclosed.

Accordingly, since both Reich and Lu fail to teach or suggest each and every feature set forth in the claims (e.g., "SRAFs," "ranking," "figure of merit," etc.) Applicants submit that claims 1-19 are allowable.

If the Examiner believes that any further discussion of the invention would be helpful, Applicants' representative is available at (518) 449-0044, and earnestly solicits such discussion.

Respectfully submitted,


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